

### **REMARKS**

The present Amendment is in response to the Examiner's Office Action mailed February 23, 2007. Claims 1, 14, 17, and 19-20 are amended. Claims 1-20 remain pending in view of the above amendments.

Please note that the following remarks are not intended to be an exhaustive enumeration of the distinctions between any cited references and the claimed invention. The remarks or lack of remarks herein are not to be construed as an admission regarding the characterization of the references or of the Examiner's contentions set forth in the Office Action. Rather, the distinctions identified and discussed below are presented solely by way of example to illustrate some of the differences between the claimed invention and the cited references and to illustrate the patentability of the pending claims. Reconsideration of the application is respectfully requested in view of the above amendments to the claims and the following remarks. For the Examiner's convenience and reference, Applicant's remarks are presented in the order in which the corresponding issues were raised in the Office Action.

### **Amended Drawings**

The Office Action objected to the drawings under 37 C.F.R. § 1.83(a). The office Action indicated that the drawings must show every feature of the invention specified from the claims. In particular, the Office Action indicated that the limitation of "more steps than the initial digital range" in claims 14 and 19-20 are not shown in the drawings. Applicant respectfully traverses.

However, claims 14 and 19-20 have been amended to recite that the adjusted digital range has more resolution. Applicant submits that Figures 3A and 3B convey that the adjusted digital range has more resolution. Applicant respectfully requests withdrawal of the objection to the drawings.

### **Rejections Under 35 U.S.C. § 103**

The Office Action rejected claims 1-20 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent NO. 6,934,470 (*Kunst*) in view of U.S. Patent No. 6,373,423 (*Knudsen*). Applicant respectfully traverses the rejection at least because the

references – either individually or in combination – fail to teach each and every limitation of the rejected claims.

For example, claim 1 is directed to a receiver in a fiber optic system that includes an adjustment circuit that allows the maximum and minimum digital values to be adjusted to define an adjusted receiver resolution between the adjusted minimum and maximum digital values. The Office Action acknowledges that *Kunst* fails to expressly disclose the adjustment circuit, but states that *Knudsen* remedies this deficiency. Applicant respectfully disagrees.

The Office Action suggests that Figure 2B illustrates an analog-to-digital converter and concludes that it would have been obvious to implement the A/D converter teachings of *Knudsen*. The Office Action further suggests that the sliding reference voltage windows illustrated in Figure 3B teaches that the adjusted receiver resolution is finer than the original receiver resolution. Applicant respectfully disagrees.

One goal of *Knudsen* is to provide an A/D conversion system with a reduced number of comparators. See Abstract. *Knudsen* “uses a smaller number of comparators and “moves them around” i.e., dynamically changes the sliding voltage range window, so that the comparators 115 perform comparisons using different comparator reference voltages for some of the input values.” See col. 6, lls. 3-6. *Knudsen* further “uses the fact that the total reference voltage range is not necessary at all times, but rather only a portion of the total reference voltage range . . . may be necessary at any given time. See col. 6, lls. 11-14. As a result, “a smaller group of comparators 115 can be re-used for various input values, thereby reducing the number of comparators 115 to be implemented in silicon . . .” See col. 6, lls. 15-18.

The re-use of comparators for various input values fails to teach or suggest the adjustment circuit required by claim 1. More specifically, the adjustment circuit provides an adjusted receiver resolution while the re-use of comparators or using “different comparator reference voltages” as taught by *Knudsen* tries to ensure that the input voltage falls within the voltage range window.

*Knudsen* teaches that the voltage window is selected so that the “input voltage 105 is approximately centered within the sliding voltage range window.” See col. 8, lls. 15-16. *Knudsen* teaches that this window is appropriate for a slowly changing input

signal. See col. 8, lls. 8-12. However, there is a risk that an abrupt change between clock cycles will fall outside of the sliding voltage range window. See col. 7, lls. 58-61. For example, an optical signal that is typically changing from a "1" to a "0" suggests an abrupt change that the sliding window taught by *Knudsen* may not accommodate.

Claim 1 has been amended to clarify that the adjusted maximum digital value is determined by a maximum value of the analog electrical signal. The adjusted minimum signal is determined by a minimum value of the analog electrical signal. This type of adjustment is not as susceptible to the risk that is associated with the sliding window taught by *Knudsen*.

In other words, the sliding window taught by *Knudsen* is not selected according to the maximum and minimum values of the analog electrical signal as required by claim 1. Rather, the sliding window is selected according to the degree or amount of change in the input signal. See col. 7, lls. 55-56. As a result, *Knudsen* fails to teach the adjustment circuit required by claim 1 and Applicant respectfully submits that claim 1 is therefore patentable over the cited art.

The independent claims 12, 17, and 18 have similar limitations that are likewise not taught by the cited art. Claim 12, for example, requires an adjustment circuit that adjusts the maximum digital value and the minimum digital value to be adjusted to values that are proportional to the highest and lowest anticipated optical values. Claim 17 selects the adjusted maximum and minimum values based on the anticipated minimum and maximum values of the analog electrical signal. Claim 18 sets the adjusted values based on the actual highest and lowest optical values. As discussed above, the sliding window taught by *Knudsen* relies on the amount of change in the input signal and does not set the sliding window according to anticipated or actual values of the optical or electrical signal.

For at least these reasons, Applicant submits that claims 12, 17, and 18 are likewise patentable over the cited art. The dependent claims rejected under § 103 are patentable for at least the same reasons.

**Conclusion**

In view of the foregoing, Applicant believes the claims as amended are in allowable form. In the event that the Examiner finds remaining impediment to a prompt allowance of this application that may be clarified through a telephone interview, or which may be overcome by an Examiner's Amendment, the Examiner is requested to contact the undersigned attorney.

Dated this 23<sup>rd</sup> day of July, 2007.

Respectfully submitted,

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